Laying Out Fields for Tractor Plowing

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Glossary

Lands.—Units into which a field is subdivided for convenience in plowing.

Headland.—A strip used for turning the tractor and plow at the end of the lands.

Border.—A strip along the side of a field which is left unplowed until the main body of the field is plowed. Borders are usually the same width as headlands.

Deadfurrow.—A double-width furrow, made when the soil plowed out of two adjacent furrows is thrown in opposite directions.

Backfurrow.—A backfurrow results when the soil plowed out of two furrows is thrown together.

Open furrow.—A furrow which is not filled by soil thrown out of another furrow.

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Laying Out Fields for Tractor Plowing

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Farmers who plow with tractors want to do a high-class job of plowing over the entire field and wish to reduce to a minimum the time spent in turning and in traveling with plow bottoms out of the ground. To accomplish this they must choose the method best suited to their conditions. Many circumstances must be considered in deciding just what method is best for a particular field with a particular outfit. No one method can be considered best for every size and shape of field.

Methods of laying out fields for tractor plowing fall into two classes: (1) The method in which fields are laid out so that when the field is plowed the plow bottoms are taken out of the ground at the ends of the field; (2) those methods in which fields are laid out so they can be plowed without lifting the bottoms out of the ground in crossing the ends.

The advantages of the method of the first class are that short turns are eliminated, except in some cases at the beginning and ending of the lands, and that it is generally possible to do plowing of a little higher quality at the corners or turns. Making short turns is awkward with some tractors, particularly the larger ones, and the operator often has difficulty in getting the outfit in the correct position for starting the furrows after such turns have been made.

The advantages of methods of the second class are that little or no time is lost in traveling with the bottoms out of the ground and that ordinarily the number of deadfurrows and backfurrows will be considerably less. The longer the time spent in turning or running with the bottoms lifted, the smaller the acreage that can be plowed in a day. Though it may pay to make some additional effort to avoid short turns when using a large tractor, the loss in time and fuel due to making long idle runs across the ends of the field is just as serious with large tractors as it is with smaller, more easily handled tractors.

The time lost in making loop turns in starting and finishing a large number of lands is less with a tractor having brakes to assist in making short turns. Wide lands increase the number of times the tractor deadheads over the headland, thus increasing the tendency to pack the soil. These factors should be taken into consideration in deciding on the most desirable size and number of lands. From the standpoint of time lost in idle running, the size of the tractor should be considered only with reference to the relative difficulty in making short turns.

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[1] This is a revision of previous editions, by H. R. Tolley, C. D. Kinsman, L. A. Reynoldson, and I. F. Reed.

In deciding on the method to use, the ease of handling the tractor and plow is not always the most important consideration. In areas of heavy rainfall it may be best to make narrow lands with frequent deadfurrows and backfurrows as an aid to drainage; in dry areas the reverse may be true. In other cases the contour or shape of the field may be such as to determine almost entirely the method that must be followed.

If a field is rectangular, relatively level, and not farmed on the contour, the choice of the method of laying it out for plowing will usually depend on how short a turn can be made with the tractor and plow and how objectionable the additional backfurrows and deadfurrows are.

Method in Which Bottoms Are Lifted at the Ends

If it is decided to lift the bottoms out of the ground in going across the ends of the field, it must then be decided into how many lands the field should be divided, how wide to leave the headlands, and where to set guide stakes or markers.

Width and Number of Lands

The wider the lands are made the fewer will be the deadfurrows and backfurrows, but the greater will be the time consumed in idle running across the ends. The effect that lands of different width has on idle travel across the ends can be illustrated by considering three alternatives for dividing a field 40 rods (660 feet) wide. In the following examples idle running time has been calculated for divisions of 5, 11, and 3 lands. Calculations are for a 3-bottom, 14-inch tractor plow.

When the field is laid off into 5 lands of 132 feet each, it will take about 38 trips lengthwise of the field to plow out each land as well as 19 turns on each headland. The average length of travel across each headland is half the width of the land, or 66 feet. The idle travel in turning for each land is therefore 2,508 feet, or almost half a mile. The total idle travel in plowing the entire field will be almost 2½ miles.

If the field is laid out in 11 lands, each 60 feet wide, the unproductive travel at the ends would be reduced to approximately 1 mile. This reduction would be largely offset by the greater number of figure-8 turns necessary in starting the extra lands and also by the probability of the plow running at less than its full width of cut for a considerable distance in finishing the extra number of lands.

If the field were laid out in only 3 lands the travel across the ends would be increased to about 4 miles, but there would be only 2 deadfurrows to finish out with the possibility of the plow not cutting its full width.

Decreasing the width of lands increases the number of deadfurrows and backfurrows. The time necessary to make the difficult turns at the ends of each deadfurrow or backfurrow reduces the advantages of narrow lands to a certain degree. Ordinarily, however, a tractor with a short turning radius that pulls a 3-bottom plow will plow a strip 40 rods wide laid out in 5 lands in about 1 hour less than if it were laid out in 3 lands.

The length of the field is also important in deciding the width of the land. The turning time in proportion to the total plowing time is greater on short fields than on long fields. For this reason wider lands are usually selected for long fields than for short fields.

The dimensions of the field will determine whether the saving in time in making narrow lands is sufficient to offset the disadvantages of the extra deadfurrows and backfurrows and any difficulties of making short turns. The most popular width under average conditions seems to be about 100 feet for a 2- or 3-bottom plow. If the field has no irregularities, however, its entire width should be measured and divided into lands of approximately equal width.

Headlands

The width of the headland will depend largely on the total length of the tractor and plow and the turning radius of the tractor. Some farmers having outfits that handle very easily do not leave more than 10 to 15 feet. However, any extra ground in the headland can be plowed just as quickly as if it were plowed with the body of the field, and plenty of room should always be left to allow easy turning and to get the outfit headed in properly at the beginning of the furrows. The wider the headland, the less the tendency to go over the same ground repeatedly in turning at the ends. Soil packing therefore tends to be less intense in wide headlands.

Headlands 15 to 25 feet wide may be suitable when one of the smaller outfits is to be used. With a large tractor pulling two or more units of plows it may be desirable to make the headlands 75 to 100 feet wide. With most outfits a headland 1½ times the total length of the tractor and plow will give plenty of room for turning. It is a good idea, particularly with the larger outfits, to make the border or headlands a multiple of the width cut by the plow. That is, headlands 17½, 21, 24½, and 28 feet wide would plow out even in 5, 6, 7, and 8 rounds, respectively, with a 3-bottom, 14-inch plow taking a full cut every round.

If the field is fenced on all sides a border the same width as the headlands may be left on each side, and it will be possible to finish the field neatly by plowing around the entire field, throwing the furrows either in or out as is required to keep the field level.

Many farmers mark the edge of the headland by plowing a shallow "scratch furrow" across the end of the field before starting on the lands. This makes it easier to keep the ends of the furrows even and the headlands uniform in width. It seems to make little difference whether the scratch furrow is thrown toward or away from the edge of the field, but throwing the furrow away from the edge of the field seems to be the more common practice. This furrow across the end of the field sometimes helps the bottoms to enter the ground more quickly at the beginning of each round.

Setting Stakes and Markers

To finish up a field without having to plow irregular or wedge-shaped strips it is essential that the lands be started straight and parallel and that the headlands be kept uniform in width. If a field is once laid out accurately and marked permanently it will not be neces-

sary to measure off lands at each plowing. In fields that are fenced, the locations of deadfurrows and backfurrows may be readily marked by setting stakes along the fence. After this has been done, old deadfurrows can readily be found when plowing the new backfurrows even if the field is covered with tall weeds.

Most farmers "step off" the distances between lands. This method is sufficiently accurate for a layout in many cases, but when a permanent layout is to be made or a large number of narrow lands are to be laid out it is advisable to use a tape or some other accurate method of measurement.

Method 1

An outline is given below to show how method 1 applies to a 20-acre field 40 rods wide and 80 rods long. For plowing by this method the field would have headlands 2 rods wide and a border on each side 2 rods wide, leaving the body of the field 36 rods wide and 76 rods long. Two plans should be used alternately on any field plowed by this method. The plans will be called plan A and plan B.

Plan A

1. Lay out a backfurrow through the center of the field, as indicated at *C* (fig. 1), and plow a strip 12 rods wide about the backfurrow, lifting the bottoms 2 rods from each end of the field. When plowing a backfurrow, it is desirable to turn the first furrow back over its original position on the return trip so that all of the soil is worked. The backfurrow will be less pronounced if the first furrow is made with the plow operating at less than the depth to which the rest of the field is plowed.

2. Plow along one side of the land already plowed, at *B* (fig. 1). Turn to the left and on the return trip across the field plow with the first furrow 2 rods from the edge of the field to allow for the border. Continue plowing, turning to the left until the deadfurrow is finished at *A*, which will be 6 rods from the inside edge of the border.

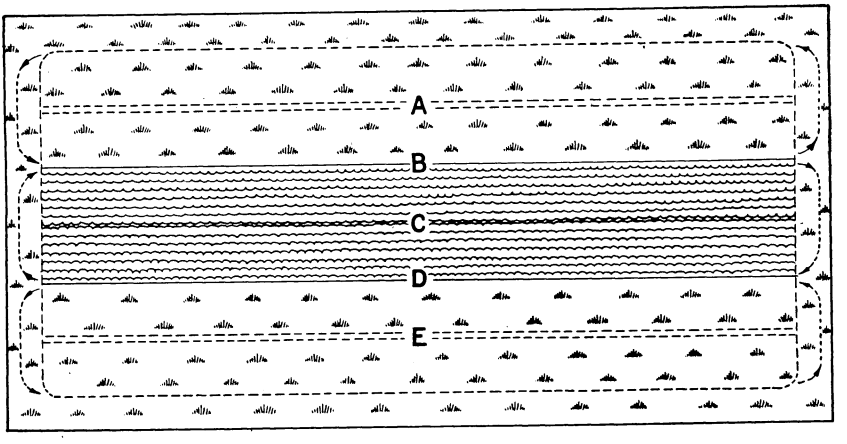

FIGURE 1.—Method 1, plan A, at the end of the first step. The locations of the two deadfurrows are shown by the double dotted lines, *A* and *E*. The direction of travel across the ends is indicated by dotted lines and arrows.

3. Plow the last third of the field between the border and the furrow at *D*, turning left at the ends and finishing the body of the field with the deadfurrow at *E*.

4. Plow the borders and headlands, traveling around the field to the left and turning the soil toward the outside of the field. This will leave an open furrow 2 rods from each edge of the field. This open furrow is only one furrow wide, so it is not so objectionable as a deadfurrow. If the headlands and borders are not plowed out cleanly, an extra round or two can be made.

Plan B (Alternate With Plan A)

Plan B is suitable for use at the next plowing after plan A.

1. There will be old deadfurrows at *A* and *E* (fig. 2). Plow a backfurrow at *A* and, turning to the right about this backfurrow, continue plowing until the plowed strip is 2 rods from the side of the field. The border is to be the same width as in plan A. The land should then be 12 rods wide.

2. Lay out a backfurrow in the old deadfurrow at *E* (fig. 2) and plow, turning to the right, until the plowed strip is 2 rods from the side of the field.

3. One-third of the body of the field, a strip 12 rods wide, remains to be plowed between the two lands plowed in the first and second steps. Plow this out, turning to the left and finishing with a deadfurrow at *C*, through the center of the field.

4. Plow the borders and headlands by traveling around the field to the right and throwing the soil toward the center of the field. Thus the lands around backfurrows *A* and *E* are finished to the field boundary, leaving only an open furrow around the edge of the field.

Plan C

If one end of the field is unfenced and the outfit can be pulled out into a road or adjacent field for turning, it may be preferable to plow

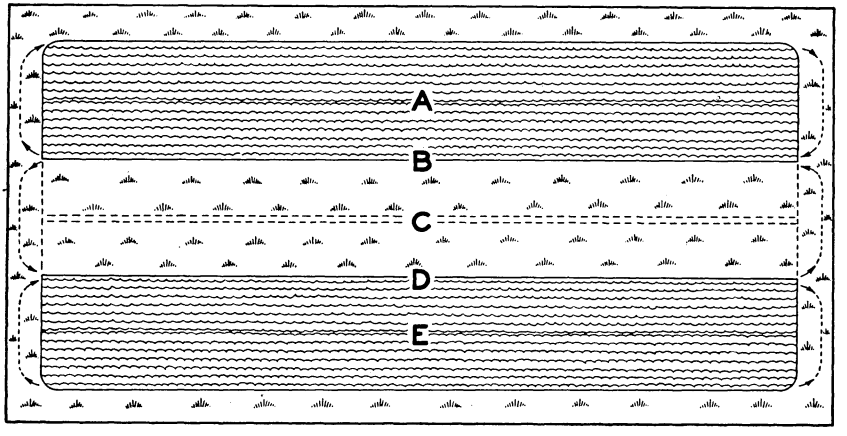

FIGURE 2.—Method 1, plan B, at the end of the second step. Note that the two backfurrows, at *A* and *E*, are where the two deadfurrows were in plan A, and the deadfurrow, at *C*, is where the backfurrow was at the previous plowing.

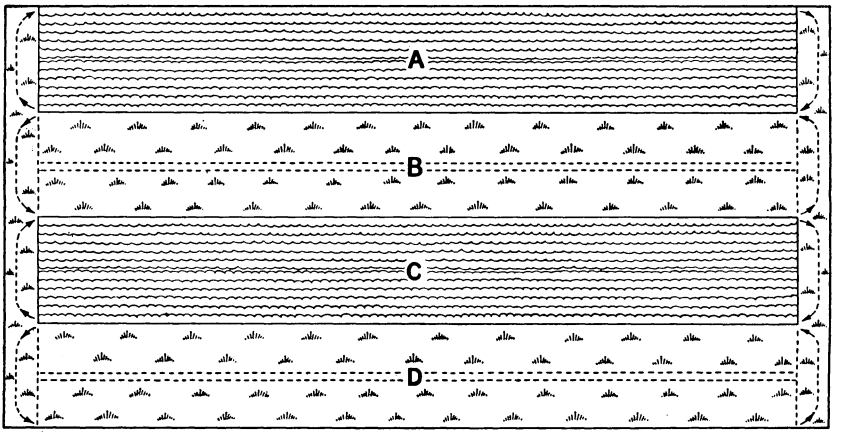

FIGURE 3.—Method 1, plan C, at the end of the second step. The order of plowing might also be *C*, *D*, *A*, and *B*. Each headland is plowed separately after the body of the field is plowed.

up to the fence on each side of the field and plow to the end of the field on the unfenced end. It may also be desirable to have a headland on each end of a field, but to plow to the fence on each side (fig. 3). This plan of plowing without leaving borders is called plan C. Backfurrows and deadfurrows in the lands are alternated with each plowing, as explained for plans A and B. Backfurrows and deadfurrows are also alternated in the headlands with each plowing.

Variations of Method 1

The number and width of lands may be changed as required to adapt method 1 to fields of different widths. It should be noted that in method 1 half the land between any two deadfurrows in the body of the field is first plowed by turning to the right about the backfurrow. The other half is then plowed by turning to the left until the deadfurrow is finished.

Plowing fields by method 1 reduces to the minimum the time spent in unproductive travel across the ends of the fields. With this method, where a complete border is to be plowed, there should always be a plan similar to plan A, with an odd number of backfurrows, and an alternate plan similar to plan B, with an even number of backfurrows.

Methods in Which Bottoms Are Left in the Ground at the Ends

The objections to the method already described are that it necessitates considerable travel with the bottoms idle and that there are many deadfurrows and backfurrows if an attempt is made to reduce the mileage of this idle travel. The use of method 1 usually results in a somewhat better job of plowing than use of a method involving an attempt to keep the bottoms in the ground all the time the tractor

is traveling. However, many farmers think that the possible reduction in quality of the work is not sufficient to offset the time saved by eliminating idle travel.

Method 2

By method 2 a rectangular field is plowed around a single backfurrow in the middle of the field (fig. 4). The bottoms are lifted only in making the comparatively few short turns on the first few trips across the ends of the plowed land. The corners are rounded off by pulling the outfit over to the right as the end is approached.

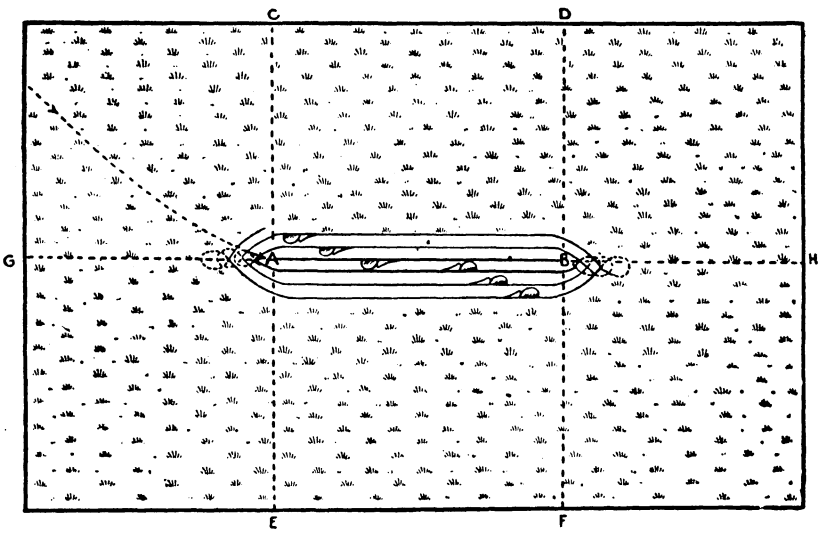

FIGURE 4.—Method 2, first stage. To begin plowing in the center of the field, a backfurrow (AB) is laid out in the center of the field. The continuation of this plan is shown in figure 5.

The turn at the ends on these first few rounds is made by making a complete circle to the left.

After the plowed land becomes wide enough for the outfit to turn around the ends, the bottoms are not lifted from the ground until the field is finished. For some large outfits the land may have to be 75 feet or more wide before this can be done. A small outfit with a short turning radius may be able to plow the ends on a strip half as wide.

To determine the position of the backfurrow at the center of the field, make the distance from A to C (figs. 4 and 5) equal the distance from A to E. The distance from A to G should be enough shorter than the distance from A to C so that when the land is rounded off at the ends and plowing around the ends is begun, as indicated in figure 5, the furrows on the ends and sides will be an equal distance from the edges of the field. The distance from B to H should be the same as the distance from A to G.

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Some care will be necessary in steering the tractor at the turns after the land becomes wide enough to permit leaving the bottoms in the ground continuously if the turns are to be kept abrupt. The shorter the turns are kept the smaller will be the triangular pieces left in the corners of the field at the finish.

If the field is square, or nearly so, it can be plowed in two or more lands, each one laid out according to this method. Unplowed pieces, each approximately twice as large as the unplowed pieces at the corners, will be left at the ends of the field between the lands.

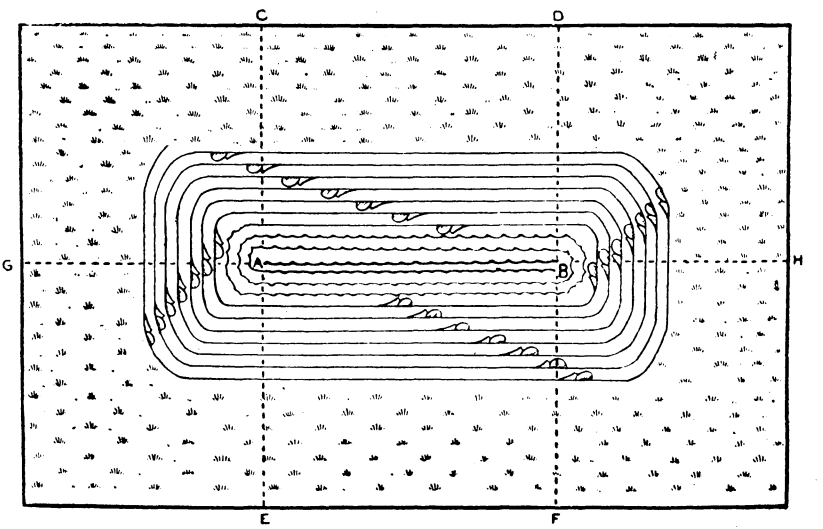

FIGURE 5.—Method 2, second stage. Plowing is continued around the central backfurrow (see fig. 4) until the field is finished.

Method 3

To plow by method 3 a rectangular field is laid out, just as in method 2, and the entire field is plowed in one land about a single backfurrow. The backfurrow is laid out along the line from *A* to *B*.

The first few rounds are made by plowing furrows the full length of the backfurrow, and lifting the bottoms at the ends. When the plowed strip is wide enough to plow across the ends, the bottoms are lifted at the ends and a turn is made to the left until the outfit is headed across the end of the field (fig. 6). The corners are kept square by turning in this way until the furrows get so near the fence that not enough room is left to make such a turn. Then the corners must be rounded and the tractor turned to the right.

This method of plowing keeps the corners square, except for the last few rounds. The unplowed pieces in the corners are about the same size as those left in a field plowed by method 1 (plan A or B).

Except for these last few rounds, the net result of plowing a field by this method is the same as is ordinarily attained by using method 2. The greatest objection is probably the time and travel necessary to make the turn to the left at each corner. This travel at each corner

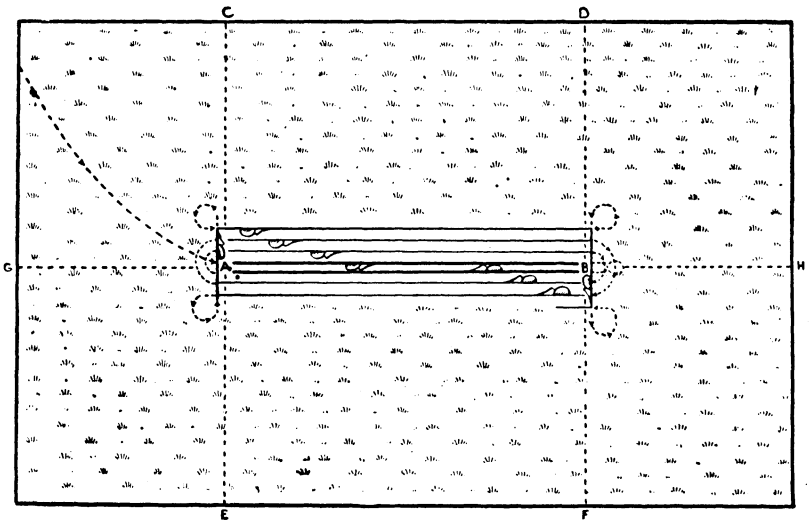

FIGURE 6.—Method 3, first stage. The field is plowed in one land by starting a backfurrow in the center of the field by the method illustrated in figure 4. The corners are kept square by making short turns to the left and swinging around so as to plow across the ends.

will amount to just about a complete circle. For a tractor with a 20-foot turning radius, this means over 100 feet of travel. Many large tractors pulling several units of plows require a considerably greater turning radius. Thus the loss of time in many cases would be too great for this method to be advisable.

If the plows are hitched to the tractor in such a way that the outfit can be backed easily, the turns can be made by backing around through a quarter of a circle (fig. 7) with a comparatively small loss in time. Such an outfit can make these turns until the field is practically finished.

Method 4

In method 4 the plowing starts at the outside of the field (fig. 8). The furrows are turned toward the fence, and left turns are made at the corners without lifting the bottoms.

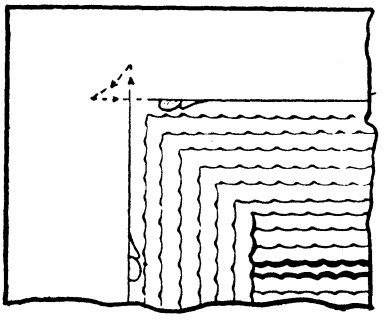

FIGURE 7.—Method 3. Corner turns may be made by backing around the corners when using a tractor-mounted plow.

A rectangular field like that shown is plowed in a single land with one deadfurrow. The corners will have to be rounded to a certain extent on the first trip around the field and kept this way throughout the plowing. This permits the tractor to make the turns without encroaching too far on the plowed ground or getting the furrows irregular and crooked near the corners. The plow will be pulled away from the last open furrow to a certain extent in making the turns, and the diagonal strips running from the ends of the deadfurrow to the corners of the field will usually have to be replowed (figs. 9 and 10).

It is not necessary to measure any distances when this method of plowing is followed, and omitting the measuring will make this method quicker than any of the methods heretofore described. On

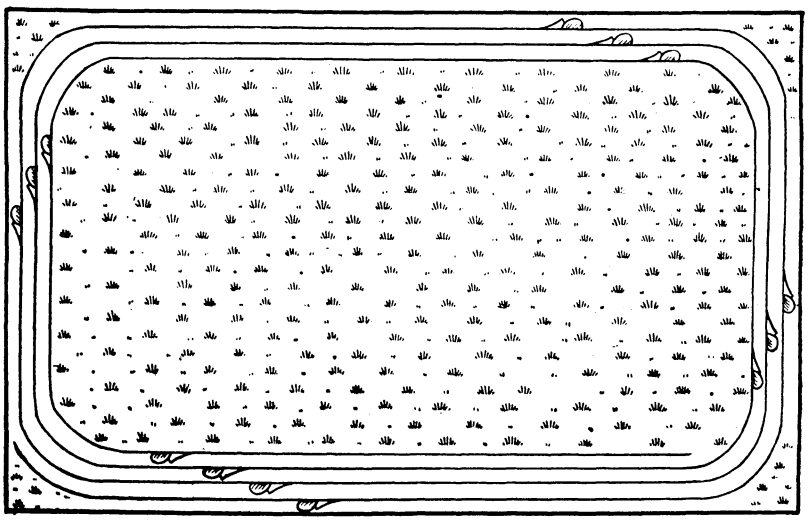

FIGURE 8.—Method 4, first stage. Plowing starts at the outside of the field with this method. The furrows are turned toward the fence, and the corners are rounded off enough to permit turning without lifting the bottoms.

the first round the plow can often be set over to the right and the ground turned nearer the fence than is possible in the two preceding backfurrow methods. The bottoms are left in the ground from the time the field is entered until the deadfurrow at the center is reached. This feature makes the method desirable if the plow is not equipped with a power lift. A field with slightly irregular or crooked boundaries can be plowed very satisfactorily by following this method—one that is very popular with many tractor operators, especially those using the disk plows.

The body of the field can be plowed to a deadfurrow in the center, and the diagonal strips running in from the corners replowed one at a time. When this method is used, it is necessary to turn on plowed ground when the unplowed strip becomes narrow. It is also necessary to turn on plowed ground at the center of the field when the diagonals are plowed.

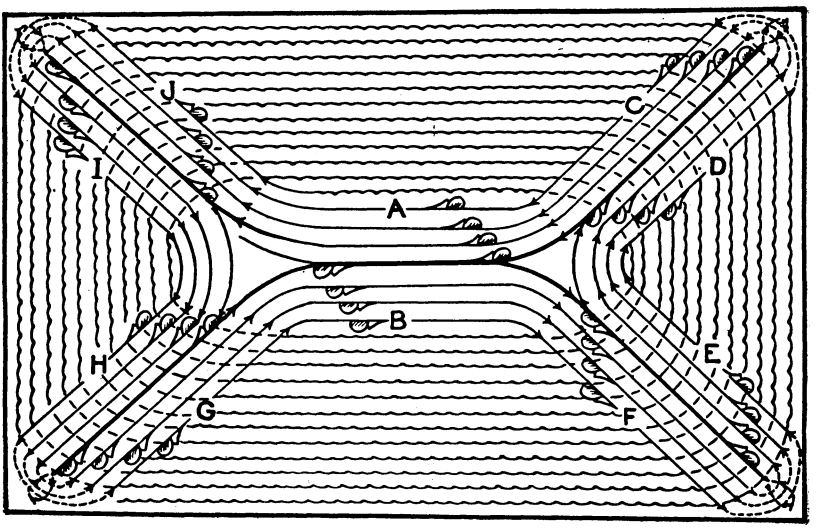

FIGURE 9.—Method 4, final stage. The diagonal strips that are left imperfectly plowed at the turning points may be finished by following this plan. A field plowed by this method has a deadfurrow along each diagonal.

Variations of Method 4

Usually, it will be preferred to plow out the diagonals at the same time the deadfurrow is finished (figs. 9 and 10). The method illustrated in figure 9 leaves a deadfurrow along each diagonal, and the method illustrated in figure 10 leaves a backfurrow down the middle of each diagonal and an open furrow on each side.

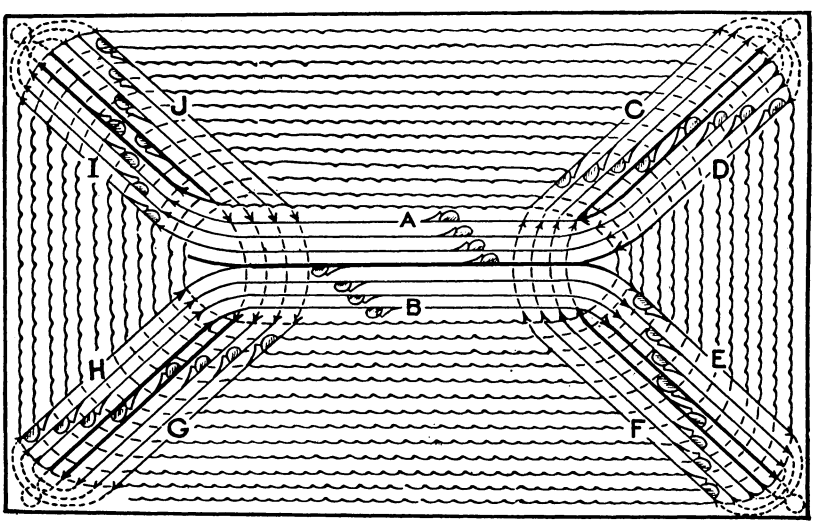

FIGURE 10.—Method 4, final stage. When a field is plowed by following method 4 and the diagonal strips are finished by following the plan illustrated in this figure, there will be a backfurrow along each diagonal.

The following plan is used if it is decided to leave a deadfurrow at the center of each diagonal: When the unplowed strip in the center of the field (*A* to *B*, fig. 9) becomes the same width as the strips that are to be replowed along the diagonals (*C* to *D*, *E* to *F*, etc., fig. 9), a right turn is made from the furrow next to *A*. The plowing then continues along the line indicated through *J*, *I*, *H*, *G*, *B*, etc., in figure 9 until the diagonals and center are finished. The tractor travels over very little plowed ground if this system is used. If the distances are correctly judged the whole field is finished at the same time, except the parts left for making short turns at the corners. The only places where the bottoms are lifted are on the few short turns at the corners when the diagonals are plowed.

If it is desired to have backfurrows down the middle of the diagonal strips, the method illustrated in figure 10 will be used. This method is similar to the one shown in figure 9, except that the backfurrows are made on the first trips along the diagonals. A right turn is made at the corners of the field to get in position for the return trip along the diagonal. The bottoms are taken out of the ground in going between two diagonals at the same end of the field, and the outfit will have to travel over plowed ground at these points.

Method 5

Method 5 is similar to method 4 except that the bottoms are lifted each time at the corners in plowing the body of the field and the diagonals are left entirely unplowed until the finish of the field. Care must be taken to get the width of all the diagonals—*C* to *D*, *E* to *F*, *G* to *H*, and *I* to *J* in figure 11—the same if either of the methods shown in figures 9 and 10 is to be used in finishing the field. The width should be ample for turning the outfit and getting it in line with the furrow before the point is reached where the bottoms are

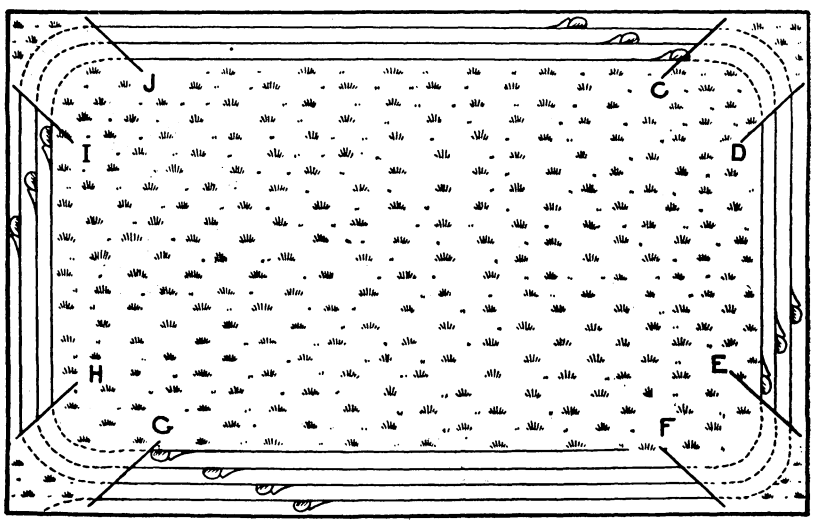

FIGURE 11.—Method 5. Bottoms are lifted at the corners with this method; otherwise, it is the same as method 4. The unplowed diagonal strips may be finished by one of the plans shown in figures 9 and 10.

to be put into the ground again. It will be better to make an extra round in plowing out the diagonals than to be cramped for space at every turn in plowing the body of the field.

Irregular Fields

Fields that are irregular because of topography or soil conservation practices may be of such a variety of shapes or present such a variety of conditions that it is impossible to give any definite directions applicable to all. If the field is comparatively level and the irregularities are confined to the boundaries on one or two sides, usually one of the methods described for rectangular fields can be adopted.

Method 1, plan A, B, or C (figs. 1, 2, and 3), can be readily adapted to fields with two long parallel sides and one or both ends irregular. It is obvious that the lands should be plowed in the direction of the parallel sides of the field. Fields having only one long straight side can also be plowed by using method 1 and making the obvious adaptations. In fields where the ends are far from being a right angle to the direction of plowing it is suggested that the lands be made rather narrow in order to reduce the unproductive travel across long angular ends.

A field with the irregularities confined to a stream that forms the boundary at one end usually can be plowed satisfactorily by using one of the methods in which the bottoms are lifted in traveling across the end (fig. 12). The procedure will be the same as in a rectangular field except in laying out the headland across the end adjacent to the

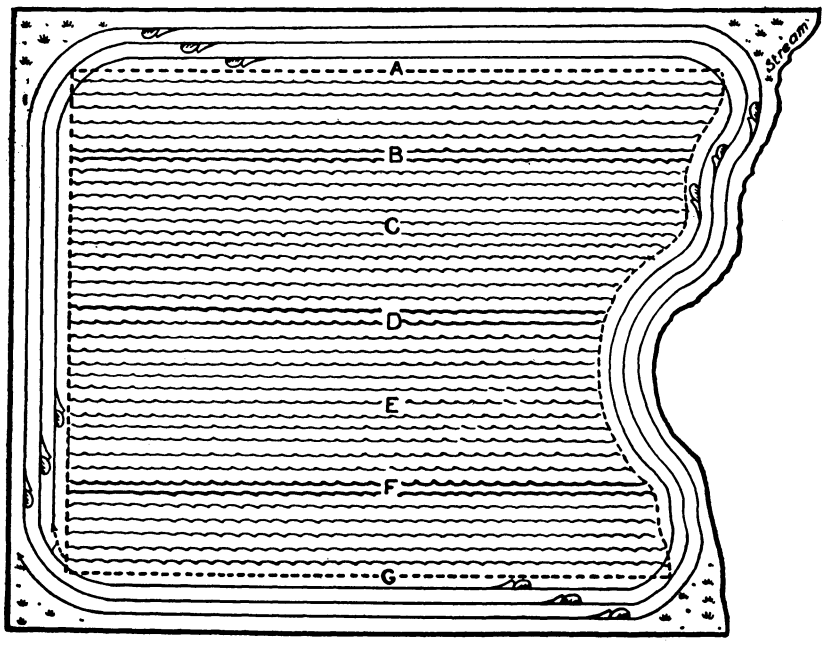

FIGURE 12.—This plan may be followed for plowing a field having one irregular side.

stream. There the line for lifting the bottoms and letting them into the ground must be made parallel to the stream if the field is to be finished without undue loss of time in plowing the headland along the stream. If the headland is plowed by turning to the left so that the first round will take in the irregularities along the stream, it will probably be less difficult to finish it satisfactorily than if it is plowed by turning to the right, as shown in the figure. Corners can be plowed out more completely if plows mounted directly on the tractor are used.

If the irregularity is simply due to a road, railroad, or a farm boundary which is a straight line but does not run at right angles to the other boundary lines that join it, the problem of laying out and plowing the headland will be little if any more difficult than in a rectangular field.

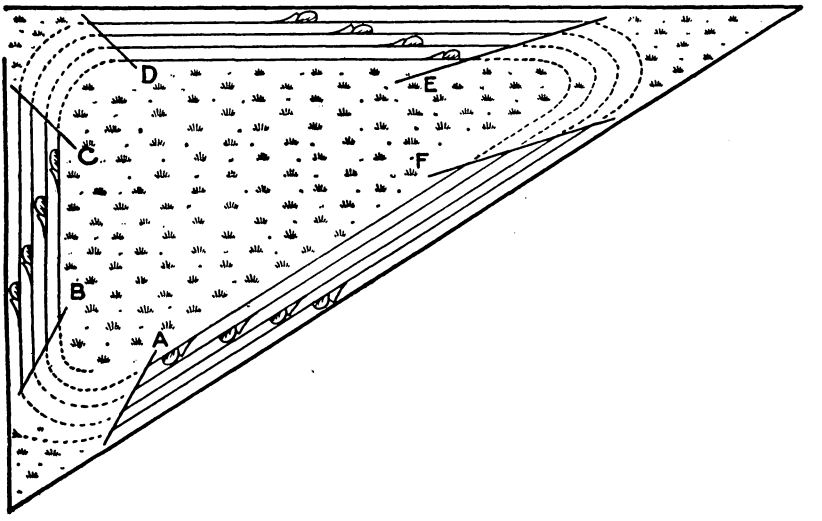

FIGURE 13.—Triangular fields may be plowed by this variation of method 5. The bottoms are lifted at the turns and the unplowed strips are finished by the plan shown in figure 14.

A triangular field can be plowed by using a variation of method 5, described on page 12. The body of the field is plowed by starting next to the fence and going around the field by turning to the left. The bottoms are lifted at the corners. The strips *A* to *B*, *C* to *D*, and *E* to *F* (fig. 13) left by lifting the bottoms at the turns should all be the same width. The strips should be wide enough to permit easy turning at the most acute angle of the field. That is, in the field shown in figures 13 and 14 the distance from *E* to *F* should determine the distance from *A* to *B* and from *C* to *D*. When the body of the field is finished there will be three unplowed strips, all the same width and extending into the center of the field from each corner. These strips are plowed in the manner indicated in figure 14.

A four-sided field in which one of the long sides is not parallel to the other can be divided into two parts, one a rectangular plot and the other a triangular plot. The two plots can be plowed separately.

If a field that would otherwise be rectangular has a square or rectangular piece taken off one corner for an orchard, a feed lot, the

farmstead, or for any other reason, it will usually be better to make two separate fields in laying it out for plowing. The two fields should be divided by an imaginary line extending from the boundary of the lot or orchard which is parallel to the longest side of the field.

Laying Out and Plowing Contour-Terraced Fields

The problems of laying out contour-farmed and terraced fields are more complicated than for level fields. Field layouts and methods of plowing must be designed to utilize the contours most effectively and to help maintain the terraces. Though the exact methods to be used will vary with different topographic, climatic, and managerial conditions, the following general principles should be followed:

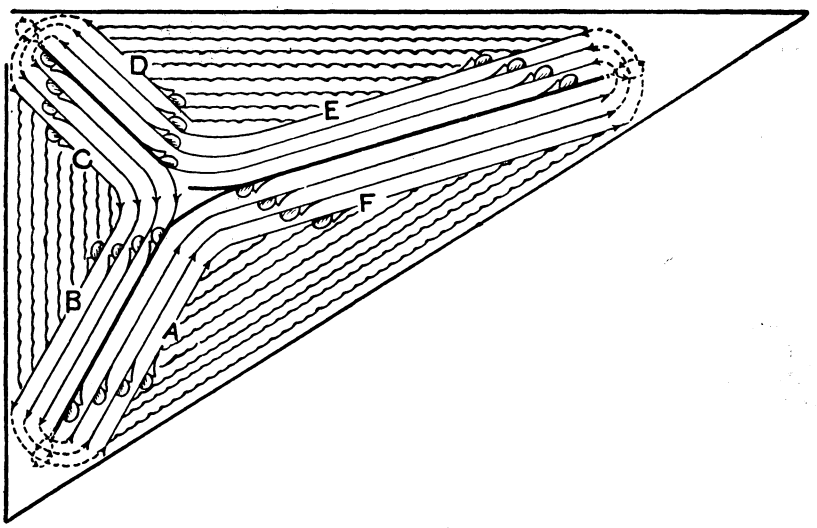

FIGURE 14.—The unplowed strips left when a triangular field is plowed by the method shown in figure 13 may be finished by following the plan shown in this figure.

1. Plowing, planting of rows, and cultivation should be parallel to the terraces. Cross operations tend to tear down the terraces and fill the water channels with soil.

2. Terrace maintenance and plowing should be combined into one operation. This is accomplished by plowing parallel to the terraces so that a deadfurrow falls in the terrace channel and a backfurrow on the terrace ridge.

3. As plowing between terraces is being finished, any irregular areas should be plowed separately, leaving a strip of uniform width for the final plowing. Turning on plowed ground can thus be minimized.[2]

[2] Detailed instructions for plowing irregular areas between terraces, and other phases of plowing contour-terraced fields with one-way and two-way plows are given in Leaflet 335, Farming Terraced Land. This leaflet may be obtained from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

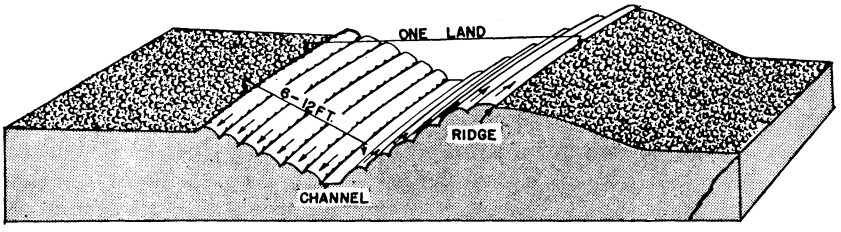

FIGURE 15.—In the one-land method of plowing terraces, the furrows are turned so there will be a deadfurrow in the channel.

4. The location of backfurrows and deadfurrows between terraces should be changed from year to year.

5. All damaged terraces should be repaired before plowing. Low places and breaks should be built up by use of a drag-pan scraper and other equipment.

6. The minimum radius for curves in terraces should be not less than 50 feet if the terrace is to be plowed effectively with a tractor. Sharper curves will also result in damage to row crops during cultivation. The radius should be kept greater than 100 feet if at all possible.

7. Plowing should never be done across the ends of terrace intervals. This produces natural water channels running up and down the slope.

Two methods of plowing out water channels and maintaining terraces are recommended. In the first method the water channel is plowed out as one land (fig. 15). The second method utilizes two lands to complete the channel (fig. 16). For either method the width of lands should be varied from year to year to prevent forming secondary ridges and channels. The two-land method has the advantage in this respect as it permits a greater variation in the width of the land. The proper width of the water channel depends upon the slope. The channel should be approximately 12 feet wide on a 12-percent slope and 20 or more feet wide on a 2- to 3-percent slope. It should be 12 to 15 inches deep.

The use of two-way plows (which throw the furrows one way as the field is traversed) simplifies the laying out of fields in most cases, as a minimum of backfurrows and deadfurrows is required. This type of plow (fig. 17) is well adapted to contour and hillside plowing, strip-crop farming, and particularly for fields to be irrigated.

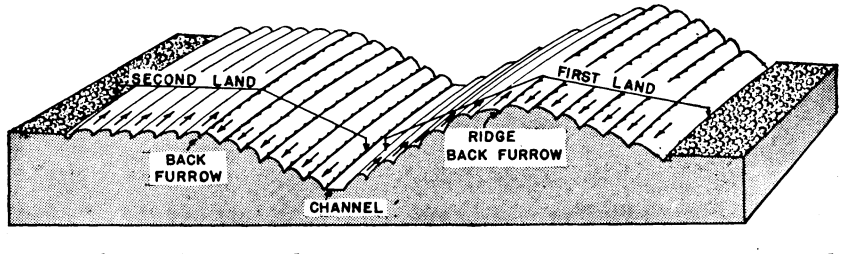

FIGURE 16.—In the two-land method of plowing terraces, a deadfurrow is made in the channel and a backfurrow is made on each ridge.

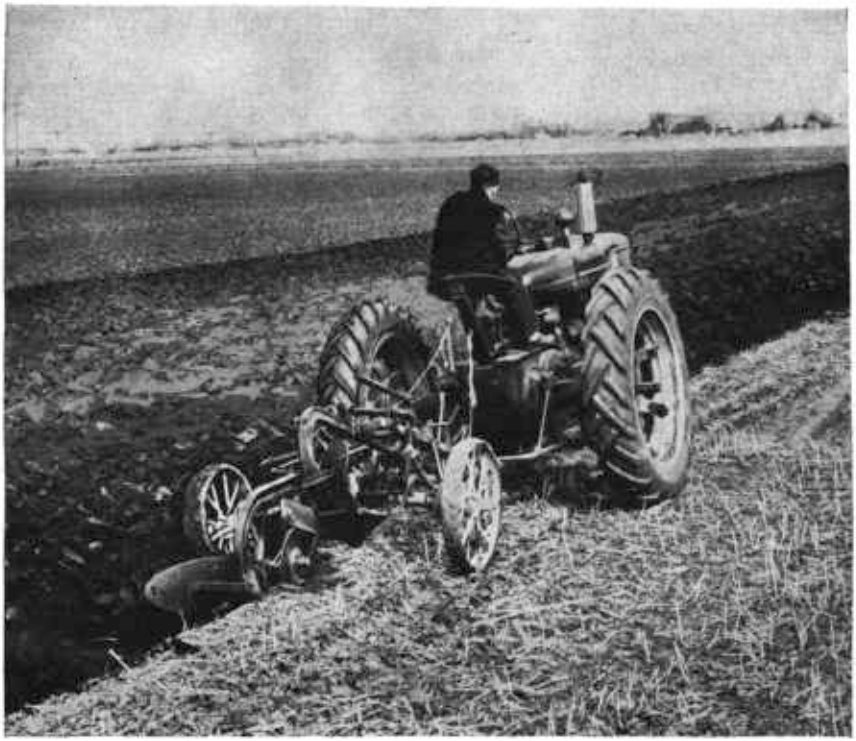

FIGURE 17.—All the furrows in a field can be turned the same direction if a two-way plow is used. The bottom which is lifted while the plow is pulled in one direction does the plowing on the return trip.

PREVENT FARM FIRES

Fires kill more than 3,000 farm people each year, and cause painful injury to many thousands more.

In farm homes fire is the main cause of death and injury among younger people.

Each year fires destroy $133,000,000 worth of farm property.

Much of this loss and suffering can be avoided by taking precautions to prevent fires or by being prepared to control those that do get started. In making a fire-safety check on your own farm, keep in mind that the primary causes of farm fires are—

- Lightning
- Sparks on the roof
- Defective chimneys or heating systems
- Faulty electric wiring or appliances
- Careless smokers
- Careless use or storage of gasoline, kerosene, oily rags, and such
- Children playing with matches

Don't start any fire unless you know you can stop it.

Keep a fire extinguisher handy and make sure every member of the family knows how to use it.

For details, see U. S. Department of Agriculture Farmers' Bulletin No. 1643, Fire Safeguards for the Farm.

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